



e3p

Noise Impact Assessment

23 Radium Street, Ancoats

Reference: 50-894-R1-7

Date: July 2025



NOISE IMPACT ASSESSMENT

23 Radium Street,
Ancoats

Prepared for:

Glide Construction

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EXECUTIVE SUMMARY

BACKGROUND

Site Address	23 Radium Street, Manchester, M4 6AY
National Grid Reference	E 385111 N 398749
Proposed Development	Proposed commercial development comprising of an extension to an existing building at 23 Radium Street, Ancoats.
Report Objectives	<p>The objectives of this report are to:</p> <ul style="list-style-type: none">Identify, measure and assess the potential impact of any existing noise sources in the immediate vicinity of the Site upon proposed residential receptors. <p>The report follows current and relevant British Standards in order to provide a robust assessment.</p>

ASSESSMENT

Surveys Completed	A full weekday and weekend background survey has been undertaken to quantify noise levels across the site.
Assessments	<p>A 3D noise model has been constructed to assess potential rooftop dining terrace patron sound upon the existing receptors in accordance with the criterion given in BS 8233:2014+A1:2019.</p> <p>Plant limits are set for the proposed development in accordance with BS 4142.</p>
Mitigation Requirements	<p>The assessment determined that no adverse impact is predicted at existing receptors due to the proposed development.</p> <p>Plant noise limits have been set for the proposed development.</p> <p>Music noise limits have been set, with doors closed and open, to ensure compliance with MCC criterion. E3P understand that the client will adopt a system which ensures that music can only be played when the rooftop is fully enclosed, with strict low-level limits applied automatically if doors or roof sections are opened.</p>

CONCLUSIONS

With mitigation measures in place, this assessment has shown that no adverse impact is predicted at the existing receptors due to proposed sound sources.

As such, noise need not be a material consideration in the granting of planning permission if the recommendations of this report are followed and included within the design stage.



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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Glide Construction to undertake a Noise Impact Assessment for a proposed commercial development at 23 Radium Street, Ancoats, to be referred to hereafter as '*the site*'.

This assessment looks to determine the key noise sources due to the proposed development and to assess their impact, if any, upon existing residential receptors and to specify mitigation measures, where required.

1.2. PROPOSED DEVELOPMENT

The client intends to develop the existing site for commercial use comprising a roof extension and dining terrace to an existing building.

This assessment has been undertaken in accordance with the following supplied drawings:

 Radium_St_Drawing_Pack (002) – Date received March 2025

Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative and reliable in order to inform an accurate assessment.

Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance.



2. ASSESSMENT METHODOLOGY

2.1. NATIONAL PLANNING POLICY FRAMEWORK

Planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- ✿ Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.
- ✿ Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and
- ✿ Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

2.2. NATIONAL PLANNING PRACTICE GUIDANCE

Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

Local planning authorities' plan-making and decision-making should take account of the acoustic environment and in doing so consider:

- ✿ Whether or not a significant adverse effect is occurring or is likely to occur.
- ✿ Whether or not an adverse effect is occurring or is likely to occur.
- ✿ Whether or not a good standard of amenity can be achieved.

In line with the explanatory note of the NPSE, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase, where applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

The "observed effect levels" are as follows:

- ✿ **Significant observed adverse effect level:** This is the level of noise exposure above which significant adverse effects on health and quality of life occur.
- ✿ **Lowest observed adverse effect level:** This is the level of noise exposure above which adverse effects on health and quality of life can be detected.
- ✿ **No observed effect level:** This is the level of noise exposure below which no effect at all on health or quality of life can be detected.

Table 2.1 summarises the noise exposure hierarchy, based on the likely average response.



TABLE 2.1 NOISE EXPOSURE HIERARCHY

PERCEPTION	EXAMPLES OF OUTCOMES	INCREASING EFFECT LEVEL	ACTION
Not Noticeable	No effect.	No observed effect	No specific measures required
Noticeable and Not Intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No observed adverse effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television, speaking more loudly, or having to close windows for some of the time because of the noise where there is no alternative ventilation. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed adverse effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and Disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion, having to keep windows closed most of the time because of the noise where there is no alternative ventilation. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant observed effect	Avoid
Noticeable and Very Disruptive	Extensive and regular changes in behaviour and/or inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening, loss of appetite, significant/medically definable harm (auditory and non-auditory).	Unacceptable adverse effect	Prevent

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any situation. These factors include the following:

- ✳ The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day. The adverse effect can also be greater simply because there is less background noise at night.
- ✳ For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise can be important.
- ✳ The spectral content of the noise and the general character of the noise. The local topology and



topography should also be considered along with the existing and, where appropriate, the planned character of the area.

More specific factors to consider when relevant:

- ✿ Where applicable, the cumulative impacts of more than one source should be considered along with the extent to which the source of noise is intermittent and of limited duration.
- ✿ Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases, a suitable alternative means of ventilation is likely to be necessary.
- ✿ If external amenity spaces are an intrinsic part of the overall design, then the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.3. BUILDING REGULATIONS: APPROVED DOCUMENT F - VOLUME 1: DWELLINGS (JUNE 2022)

Approved document F Volume 1: Dwellings (ADF) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to means of ventilation within dwellings. The ventilation strategy specified within the ADF are as follows.

1.9 The ventilation strategy in this approved document relies on a combination of all of the following.

a. Extract ventilation from rooms where water vapour or pollutants are likely to be released (e.g. bathrooms and kitchens), to minimise their spread to the rest of the building. Ventilation fans may be either intermittent operation or continuous operation.

b. Whole dwelling ventilation to provide fresh air to the building and to dilute, disperse and remove water vapour and pollutants not removed by extract ventilation.

c. Purge ventilation to remove high concentrations of pollutants and water vapour. Purge ventilation is used intermittently and required only for pollutants produced by occasional activities (e.g. fumes from painting).

1.10 Ventilation may be delivered through natural ventilation, mechanical ventilation or a combination of both.

1.11 The ventilation systems in this approved document are examples of systems that comply with Part F of the Building Regulations. Other ventilation systems may be acceptable if they can be shown to meet an equal level of performance.

Within the ADF there are three system specific ventilation systems that can be utilised to provide sufficient ventilation. These methods are as follow.

1. **Natural ventilation with background ventilators and intermittent extract fans** (guidance suitable only for less airtight dwellings) - Ventilation provided by thermal, wind or diffusion effects through doors, windows or other intentional openings without the use of mechanically driven equipment. For the purposes of this approved document, natural ventilation refers to a ventilation strategy using background ventilators and intermittent extract ventilation.



2. **Continuous mechanical extract ventilation** - Mechanically driven ventilation that continuously extracts indoor air and discharges it to the outside.
3. **Mechanical ventilation with heat recovery** - A mechanically driven ventilation system that both continuously supplies outdoor air to the inside of the dwelling and continuously extracts indoor air and discharges it to the outside. For the purposes of this approved document, the guidance for mechanical ventilation with heat recovery applies to centralised or decentralised supply and extract systems, with or without heat recovery.

2.4. BUILDING REGULATIONS: APPROVED DOCUMENT O – OVERHEATING (JUNE 2022)

Approved document O - Overheating (ADO) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to the mitigation of overheating. In relation to noise the ADO provides the following guidance.

3.2 In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

- a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).
- b. 55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).

3.4 Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants'

Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.

NOTE: Guidance on reducing the passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants' Acoustics, Ventilation and Overheating: Residential Design Guide (2020)

2.5. BRITISH STANDARD BS 8233:2014 – GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

2.5.1. NOISE CRITERIA LIMITS

The scope of this standard is the provision of recommendations for the control of noise in and around buildings including residential dwellings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.



The standard suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 2.2.

TABLE 2.2 BS 8233:2014 RECOMMENDED INTERNAL NOISE LEVELS

CRITERION	TYPICAL SITUATION	DESIGN CRITERION, $L_{Aeq,T}$ (dB)
Suitable Resting and Sleeping Conditions	Living Room	35
	Bedroom	30

BS 8233 goes on to recommend noise levels for gardens:

It is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors might be warranted.

BS 8233 goes on to say:

In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.

2.5.2. VENTILATION REQUIREMENTS

Where a partially open window cannot be relied upon to provide an adequate level of façade sound insulation performance, it is necessary to consider alternative ventilation for habitable rooms. Section 8.4.5.4 within BS 8233 states:

The Building Regulations' supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice.

Alternatively, acoustic ventilation units (see 7.7.2 below) are available for insertion in external walls. These can provide sound reduction comparable with double glazed windows. However, ducted systems with intakes on the quiet side of the building might be required in very noisy situations, or where appearance rules out through-the-wall fans.

Section 7.7.2 states:

NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.



2.6. BS 4142: 2014+A1:2019 'METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND'

This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- ✿ Sound from industrial and manufacturing processes.
- ✿ Sound from fixed installations which comprise mechanical and electrical plant and equipment.
- ✿ Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and
- ✿ Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

The procedure detailed in the standard compares the measured or predicted specific noise level from any of the above with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is typical.

The specific noise level also acknowledges the reference time intervals depending upon whether the noise source operates during daytime (1-hour) or night-time (15-minute) periods.

There are several 'penalties' which can be attributed to the specific sound level depending upon the 'acoustic features' of the sound level under investigation as follows:

Tonality

- ✿ +2 dB: where the tonality is just perceptible.
- ✿ +4 dB: where the tonality is clearly perceptible; and
- ✿ +6 dB: where the tonality is highly perceptible.

Impulsivity

- ✿ +3 dB: where the impulsivity is just perceptible.
- ✿ +6 dB: where the impulsivity is clearly perceptible; and
- ✿ +9 dB: where the impulsivity is highly perceptible.

Intermittency

- ✿ +3dB: where the intermittency is readily distinctive against the acoustic environment.

In addition to the above, there is a penalty for 'other sound characteristics' of +3 dB where a sound exhibits characteristics that are neither tonal nor impulsive, though are readily distinctive against the acoustic environment. BS 4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.



Assessment of the rating level relative to the background sound level can yield the following commentary:

-  Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact.
-  A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
-  A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
-  The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.



3. SURVEY RESULTS

The measurement positions are detailed in Figure 1 of Appendix II.

3.1. UNATTENDED BACKGROUND AND AMBIENT SOUND SURVEY

E3P have undertaken an unattended background and ambient sound survey in a position considered representative of the closest noise sensitive receptors.

The survey was carried out over the following time periods:

📅 11:00 Wednesday 7th June to 10:00 Monday 12th June 2023.

The following noise measurement position was chosen for the Background Sound Survey:

📍 Noise Measurement Position 1 (NMP1): Located out of a first-floor window on the eastern façade of the existing building. The microphone of the sound level meter was set at a height of 3.5 m above ground level and in facade conditions. Sound sources consisted of road traffic on the local road network and occasional extract fan noise from an existing workshop on situated on the floor below the monitoring location.

Table 3.1 details the measured background sound levels. The daytime levels correspond to the $L_{A90,1hr}$ and the night-time levels to the $L_{A90,15mins}$. The full data set is available upon request.

TABLE 3.1 MEASURED BACKGROUND SOUND PRESSURE LEVELS

DATE	TIME PERIOD	RANGE OF MEASURED BACKGROUND SOUND LEVELS, $L_{A90,T}$ (dB)	MEDIAN MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
Wednesday 7th June 2023	Daytime	44.4-55.1	47
	Night-time	45.6-50.7	50
Thursday 8th June 2023	Daytime	44.1-57.6	47
	Night-time	41.0-46.6	43
Friday 9th June 2023	Daytime	44.1-57.2	47
	Night-time	40.2-44.0	42
Saturday 10th June 2023	Daytime	40.0-44.5	42
	Night-time	41.5-48.7	48
Sunday 11th June 2023	Daytime	35.6-47.9	40
	Night-time	33.8-44.1	37

In line with the Manchester City Council Planning and Noise Technical Guidance Note, Appendix A was reviewed for setting appropriate background noise levels. Using the Appendix A methodology, the resulting background levels were calculated as approximately 44 dB L_{A90} (daytime) and 42 dB L_{A90} (night-time).



However, to ensure a conservative and robust assessment, lower background levels were used in this report. These were derived through continuous monitoring over weekday and weekend periods, with hourly and 15-minute averages calculated and the lowest values selected. These conservative values fall below those generated via Appendix A and therefore represent a stricter basis for assessment.

This approach ensures that potential plant noise impacts are not underestimated, and any conclusions drawn remain precautionary and fully protective of residential amenity

40 dB is taken as the typical background as it is the minimum value of the averaged individual hourly periods and 37 dB is taken as the typical night-time background as it is the minimum value of the averaged individual 15 minute periods.

The levels highlighted bold above are the lowest measured modal levels to be used to set any plant noise limits on the proposed development.

TABLE 3.2 NOISE MEASUREMENT EQUIPMENT AND CALIBRATION DATES

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER & TYPE NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE AT TIME OF SURVEY
NMP1	Sound Level Meter	01dB Fusion	14226	01/12/2023
	Pre-amplifier	01dB Pre22	2135072	
	Microphone	GRAS 40CD	470570	
	Calibrator	Cirrus CR 515	99204	25/07/2023

The sound level meters were field calibrated on site using the above-mentioned calibrator prior to and after noise measurements were taken. No significant drift was witnessed as noted above. Calibration certificates are available upon request.



4. NOISE IMPACT ASSESSMENT

For the purposes of this assessment, E3P have used noise modelling software, CadnaA 2024 MR1, to determine the impact of noise from the proposed development on existing receptors.

The following inputs have been included in the model:

- ✳ Radium_St_Drawing_Pack (002) – Date received March 2025
- ✳ Site elevations have been taken as existing by way of a 2 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
- ✳ Existing buildings are included.
- ✳ A reflection order of 2 has been used in all calculations.
- ✳ Noise levels generated using ISO 9613-1 and ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

The main source of sound from the development is a proposed outdoor seating area associated with a dining terrace located on the roof of the proposed development.

A methodology for assessing and calculating the noise from small or medium sized crowds is proposed by Hayne, Rumble and Mee (2006), which has been applied to noise from patrons using the external seating area associated with the public house to the south. Hayne et al (2006) state that the A-weighted sound power level of crowd noise is a function of the following variables:

- ✳ An individual’s voice effort.
- ✳ The total number of people in the crowd.
- ✳ Whether the crowd are synchronised or random with time, which can affect the maximum noise levels (L_{Amax}).
- ✳ Whether the crowd is directional or has a diffused orientation.

Currently there is proposed outside seating for 96 patrons. The seating area is inputted as individual point sources, accounting for 48 people each, having a conversation with raised voices. A total of 8-point sources are inputted to account for 24 people all talking, in tables of 6, with raised voices for 100% of the hour. This allows for a 2-way conversation between 96 people.

A sound pressure level of 66 dB for raised speaking, at 1 m, is used and factored up to 6 people via a simple $10 \log$ (number of people) calculation. This results in a sound power level of 79 dB per table of 6 people. No directivity correction is applied.

The client has advised that with regards to opening hours, they would want to aim for use of the space until 10:30pm Mon-Thu and 11:30pm Fri and Saturday. Therefore, the external seating area associated with the dining terrace has been assessed during the daytime and night-time periods. To inform a worst case assessment, all windows, doors and the roof of the proposed structure have been modelled as being open.



4.1. EXTERNAL NOISE LEVEL ASSESSMENT

The noise model has been used to predict noise levels in rear garden areas to be used for relaxation. The only external amenity area nearby is the proposed gardens associated with the Manchester Life approved scheme to the rear of the development. The predicted levels range between 40 dB and up to 44 dB.

As such, it is predicted that the No Observed Adverse Effect Level (NOAEL) is achieved in all rear garden areas with the following commentary:

Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.

Accordingly, no action is required for these areas.

4.2. INTERNAL NOISE LEVEL ASSESSMENT

With regards to internal noise levels, E3P has assumed a standard glazing specification of 4 mm glass/20 mm air space/4 mm glass affords sound insulation performance in the order of 29 dB. This value has been used to calculate internal noise levels at existing receptors.

The recently published AVO guide recommends that a partially open window provides approximately 13 dB attenuation.

The model has been used to predict façade noise levels at all floors. In order to determine any requirements for mitigation, E3P has added the reduction provided by the open window (13 dB) to the relevant criterion for day (35 dB). As such, any facades subject to noise levels higher than 48 dB during the day will experience adverse impact due to the proposed development.

TABLE 4.2 PREDICTED INTERNAL NOISE LEVELS AT NEARBY RECEPTORS

REEPTOR	HIGHEST PREDICTED FAÇADE LEVELS (dB)	OPEN WINDOW SOUND REDUCTION (dB)	INTERNAL NOISE LEVEL (dB)
52 Jersey Street	35	13	22
The Heim Residences	41		28

With open windows, internal levels at nearest receptors are at most 28 dB and fall below the internal noise criterion for both daytime and night-time periods. As such, no adverse impact is predicted due to the proposed development.



5. PROPOSED FIXED PLANT NOISE LIMITS

At the time of submission, details of proposed fixed plant items were unknown. As such, the following recommendations have been made:

- ✿ Any fixed plant items should be located within the site and not located at facades which face noise sensitive receptors.
- ✿ The resultant rating level from the cumulative impact of all proposed fixed plant items must not exceed the existing background sound levels, accounting for the above proposed noise levels, at the closest receptors. The lowest median measured background sound levels were found to be 40 dB during the day and 37 dB during the night.

It is assumed that any fixed plant items proposed would have a low noise level and most likely will consist of A/C units. Considering the typical noise levels of these units and the surrounding existing usage, the impact of these would be negligible.

Where this is not the case, it is recommended that an acoustician is involved to ensure the plant to be installed will not adversely affect the receptors.



6. INTERNAL MUSIC NOISE LIMITS

In order to assess the potential for amplified break-out upon existing receptors, E3P have drawn upon the advice given in the Manchester City Council Planning & Noise Technical Guidance which notes:

A planning application for a new entertainment venue that is structurally detached from other building uses should demonstrate that music noise from the proposal will not be 'audible' in nearby residential properties, assuming that the residential properties in question have their windows open. The criterion here is:

'Entertainment noise (LAeq,5min) should be controlled to 5dB below the typical background noise level (LA90) in each octave band at the nearest noise sensitive location'.

As such, in order to achieve the above criteria, it is necessary to set limits inside the venue based on detailed calculations of break-out. This will require back calculations from the closest habitable room, with the criteria set, through the façade of the venue and resulting in an absolute limit inside that cannot be exceeded should the limits at the receptors be achieved. A distance correction of 10 x Log is applied to inform a worst-case assessment and limit. No correction is applied to the internal to external break-out with doors open.

It is assumed that the bi-fold doors would be double glazed at 4 mm glass / 20 mm air space / 4 mm glass. The remainder of the façade is considered to be much higher in attenuation than the glazed areas.

Table 6.1 below details the process of calculating the internal noise limits at the venue, based on achieving the -5 dB below background which is taken as the lowest daytime period.

TABLE 6.1 INTERNAL MUSIC NOISE LIMITS – DOORS CLOSED

HZ	63	125	250	500	1k	2k	4k
Lowest Median measured Background sound level, L _{90,T} (dB)	52.4	44.8	46.3	44.0	39.5	33.8	29.8
MCC Criterion (-5 dB) (dB)	47.4	39.8	41.3	39	34.5	28.8	24.8
Distance to façade of habitable room (m)	7	7	7	7	7	7	7
Corrected for distance (m)	64.3	56.7	58.2	55.9	51.4	45.7	41.7
Door/Glazing SRI (dB)	21	21	20	33	42	46	39
Unweighted Limit Inside Venue (dB)	85.3	77.7	78.2	88.9	93.4	91.7	80.7
A-weighted Limit inside Venue (dBA)	59.1	61.5	69.5	85.7	93.4	92.9	81.7



The above A-weighted limit results in an **absolute internal level of 96.7 dB** as measured at the façade inside.

The most important limits are the unweighted frequency limits, and it is extremely important that these are not exceeded.

The above is based on the bi-fold doors being closed. Where this is not the case, the above limits would be reduced to as follows.

TABLE 6.2 INTERNAL MUSIC NOISE LIMITS – DOORS OPEN

HZ	63	125	250	500	1k	2k	4k
Lowest Median measured Background sound level, $L_{90,T}$ (dB)	52.4	44.8	46.3	44.0	39.5	33.8	29.8
MCC Criterion (-5 dB) (dB)	47.4	39.8	41.3	39	34.5	28.8	24.8
Distance (m)	7	7	7	7	7	7	7
Corrected for distance (m)	64.3	56.7	58.2	55.9	51.4	45.7	41.7
Door/Glazing SRI (dB)	0	0	0	0	0	0	0
Unweighted Limit Inside Venue (dB)	64.3	56.7	58.2	55.9	51.4	45.7	41.7
A-weighted Limit inside Venue (dBA)	38.1	40.5	49.5	52.7	51.4	46.9	42.7

The above A-weighted limit results in an **absolute internal noise level of 57.1 dB L_{Aeq} at the opening due to music**. As such, it is highly recommended that the bi-fold doors are only opened in daytime summer hours with background music playing only and no loud music playing.

E3P understand that the client will adopt a system which ensures that music can only be played when the rooftop is fully enclosed, with strict low-level limits applied automatically if doors or roof sections are opened.



7. CONCLUSION AND RECOMMENDATIONS

E3P were commissioned by Glide Construction to undertake a Noise Impact Assessment for a proposed commercial development at 23 Radium Street, Ancoats.

A full weekday and weekend background noise survey has been undertaken at a position representative of the nearest noise sensitive receptors.

A 3D noise model has been constructed to assess potential commercial sound upon the existing receptors in accordance with the criterion, given in BS 8233.

Plant noise limits have been set for the proposed development.

Music limits have been set for both doors open and doors closed scenarios. E3P understand that the client will adopt a system which ensures that music can only be played when the rooftop is fully enclosed, with strict low-level limits applied automatically if doors or roof sections are opened.

This assessment has shown that no adverse impact is predicted at the existing receptors due to the proposed development.

As such, noise need not be a material consideration in the granting of planning permission if the recommendations of this report are followed and included within the design stage.

END OF REPORT



APPENDIX I

GLOSSARY OF ACOUSTIC

TERMINOLOGY

NOISE

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. The most widely used weighting mechanism that best corresponds to the response of the human ear is the "A"-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective but, as a general guide, a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. An indication of the range of sound levels commonly found in the environment is given in the following table.

TABLE A1 TYPICAL SOUND PRESSURE LEVELS

SOUND PRESSURE LEVEL	LOCATION/EXAMPLE
0	Threshold of hearing
20–30	Quiet bedroom at night
30–40	Living room during the day
40–50	Typical office
50–60	Inside a car
60–70	Typical high street
70–90	Inside a factory
100–110	Burglar alarm at 1 m away
110–130	Jet aircraft on take off
140	Threshold of pain



ACOUSTIC TERMINOLOGY

TABLE A2 TERMINOLOGY

DESCRIPTOR	EXPLANATION
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
L_{Aeq, T}	L _{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
L_{Amax}	L _{Amax} is the maximum A-weighted sound pressure level recorded over the period stated. L _{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L _{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the "fast" sound level meter response.
L₁₀ and L₉₀	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The L _n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L ₁₀ is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L ₉₀ is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L ₁₀ index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root-mean-square section of a sound level meter with a 125-millisecond time constant.
Slow	A time weighting used in the root-mean-square section of a sound level meter with a 1000-millisecond time constant.



APPENDIX II

MEASURED SOUND PRESSURE LEVELS

TABLE A1: HOURLY AMBIENT AND BACKGROUND SOUND LEVEL DATA – NMP4

PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
07/06/2023 11:00	52.5	46.9
07/06/2023 12:00	54.1	48.0
07/06/2023 13:00	55.8	55.1
07/06/2023 14:00	56.4	55.1
07/06/2023 15:00	55.6	47.4
07/06/2023 16:00	51.0	46.5
07/06/2023 17:00	49.9	46.6
07/06/2023 18:00	48.2	45.9
07/06/2023 19:00	47.6	45.4
07/06/2023 20:00	47.2	44.9
07/06/2023 21:00	49.1	44.4
07/06/2023 22:00	50.8	50.1
07/06/2023 23:00	50.7	50.1
08/06/2023 00:00	50.7	50.2
08/06/2023 01:00	50.2	49.7
08/06/2023 02:00	50.3	49.8
08/06/2023 03:00	50.4	49.7
08/06/2023 04:00	50.6	50.1
08/06/2023 05:00	51.2	50.5
08/06/2023 06:00	50.2	46.1
08/06/2023 07:00	55.9	47.5
08/06/2023 08:00	58.6	57.6
08/06/2023 09:00	58.3	57.3
08/06/2023 10:00	56.8	46.9
08/06/2023 11:00	50.9	47.2
08/06/2023 12:00	51.5	47.4
08/06/2023 13:00	54.3	46.8
08/06/2023 14:00	53.2	47.1
08/06/2023 15:00	53.4	47.1
08/06/2023 16:00	49.9	47.0
08/06/2023 17:00	48.5	46.7
08/06/2023 18:00	48.9	45.8



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
08/06/2023 19:00	47.4	45.4
08/06/2023 20:00	47.2	45.3
08/06/2023 21:00	47.9	45.0
08/06/2023 22:00	48.2	44.1
08/06/2023 23:00	45.9	43.1
09/06/2023 00:00	44.2	42.1
09/06/2023 01:00	42.3	41.1
09/06/2023 02:00	43.2	41.5
09/06/2023 03:00	43.7	41.7
09/06/2023 04:00	44.5	42.4
09/06/2023 05:00	45.3	43.2
09/06/2023 06:00	47.9	45.2
09/06/2023 07:00	53.6	47.4
09/06/2023 08:00	55.2	48.2
09/06/2023 09:00	56.8	55.4
09/06/2023 10:00	56.2	53.1
09/06/2023 11:00	57.2	48.1
09/06/2023 12:00	58.2	49.6
09/06/2023 13:00	57.9	57.2
09/06/2023 14:00	54.4	48.6
09/06/2023 15:00	52.9	47.4
09/06/2023 16:00	48.8	46.0
09/06/2023 17:00	48.2	46.0
09/06/2023 18:00	48.3	45.9
09/06/2023 19:00	47.5	45.5
09/06/2023 20:00	48.9	45.2
09/06/2023 21:00	47.0	44.7
09/06/2023 22:00	46.4	44.1
09/06/2023 23:00	45.7	43.6
10/06/2023 00:00	45.3	43.1
10/06/2023 01:00	43.1	41.1
10/06/2023 02:00	42.8	40.4
10/06/2023 03:00	45.2	40.8



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
10/06/2023 04:00	43.5	40.8
10/06/2023 05:00	44.5	41.7
10/06/2023 06:00	45.2	42.3
10/06/2023 07:00	45.1	42.4
10/06/2023 08:00	44.3	41.4
10/06/2023 09:00	45.0	42.0
10/06/2023 10:00	48.2	42.6
10/06/2023 11:00	46.2	42.7
10/06/2023 12:00	48.4	42.7
10/06/2023 13:00	48.2	43.7
10/06/2023 14:00	47.5	44.4
10/06/2023 15:00	47.8	43.7
10/06/2023 16:00	46.8	43.0
10/06/2023 17:00	45.8	41.6
10/06/2023 18:00	46.7	43.6
10/06/2023 19:00	47.9	44.5
10/06/2023 20:00	43.6	40.2
10/06/2023 21:00	44.3	40.0
10/06/2023 22:00	57.7	42.3
10/06/2023 23:00	44.7	41.9
11/06/2023 00:00	44.7	42.4
11/06/2023 01:00	46.6	42.0
11/06/2023 02:00	47.9	47.3
11/06/2023 03:00	52.5	47.7
11/06/2023 04:00	48.7	47.8
11/06/2023 05:00	49.8	48.4
11/06/2023 06:00	48.9	48.3
11/06/2023 07:00	49.3	47.9
11/06/2023 08:00	49.1	46.7
11/06/2023 09:00	47.2	46.5
11/06/2023 10:00	46.7	45.6
11/06/2023 11:00	45.0	36.9
11/06/2023 12:00	47.0	36.7



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
11/06/2023 13:00	44.3	36.8
11/06/2023 14:00	47.6	36.8
11/06/2023 15:00	66.4	38.9
11/06/2023 16:00	63.9	43.3
11/06/2023 17:00	47.4	43.7
11/06/2023 18:00	48.0	41.6
11/06/2023 19:00	44.0	40.4
11/06/2023 20:00	43.4	38.0
11/06/2023 21:00	43.4	37.4
11/06/2023 22:00	43.7	35.6
11/06/2023 23:00	39.7	35.3
12/06/2023 00:00	53.3	35.9
12/06/2023 01:00	39.1	35.1
12/06/2023 02:00	39.4	36.9
12/06/2023 03:00	47.1	37.6
12/06/2023 04:00	49.1	39.6
12/06/2023 05:00	45.2	41.1
12/06/2023 06:00	45.8	42.8
12/06/2023 07:00	54.3	42.7
12/06/2023 08:00	55.6	45.5
12/06/2023 09:00	56.4	55.7



APPENDIX III

FIGURES

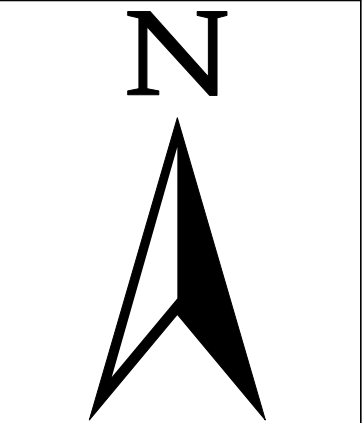
Figure 1 - Noise Measurement Position



Project:
23 Radium Street,
Ancoats

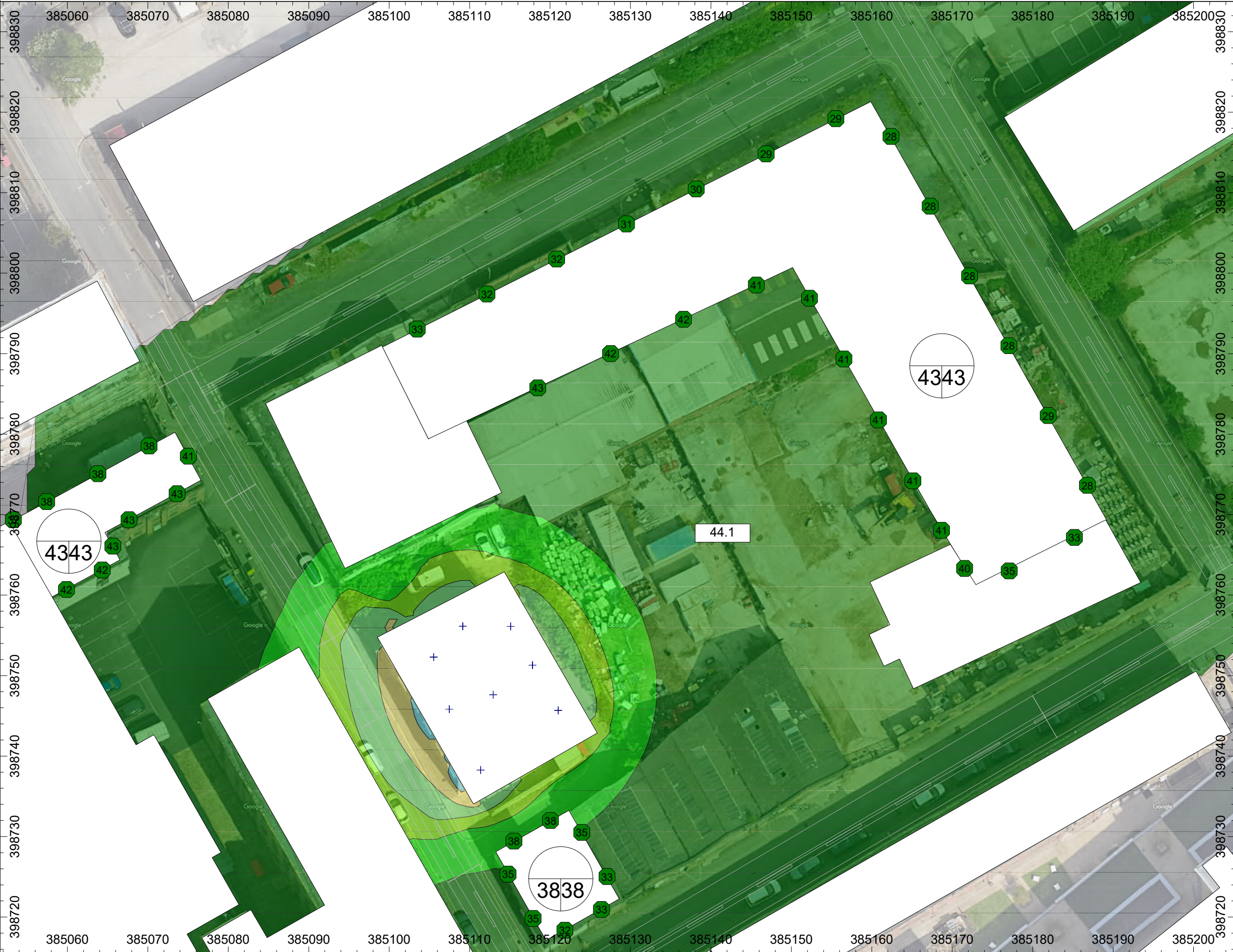
Project-No:
50-894

Client:
Glide Construction



Project Engineer: Melissa Bailey
Date: 13/06/2025

Figure 2 - Daytime Grid Noise Map BS 8233 - Calculation at 19m above ground level (Rooftop Level)



Project:
23 Radium Street,
Ancoats

Project-No:
50-894

Client:
Glide Construction

**Daytime Noise Level,
L_{Aeq,8hr} (dB)**

...	<= 48
48 < ...	<= 50
50 < ...	<= 52
52 < ...	<= 56
56 < ...	<= 58
58 < ...	<= 60
60 < ...	<= 62
62 < ...	<= 65
65 < ...	

Noise Map Objects

- + Point Source
- Line Source
- Red outline Road
- White outline Building
- Grey outline Barrier
- White outline Bridge
- Circle with cross Building Evaluation
- White outline Calculation Area

Project Engineer: Melissa Bailey
Date: 13/06/2025